#6

SEQUENCE LISTING

<110> SZOSTAK, JACK W.
WILSON, DAVID S.
KEEFE, ANTHONY D.

<120> STREPTAVIDIN-BINDING PEPTIDES AND USES THEREOF

<130> 00786/388002

<140> US 10/004,381
<141> 2001-10-31

<150> US 60/244,541
<151> 2000-10-31

<160> 41

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 101
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<220>
<223> selected peptide

<400> 1
Met Asp Glu Lys Thr His Cys Thr Ile Ser Met Asn Gly Ala Val Pro
1 5 10 15
Leu Val Pro His His His Pro Gln Gly Asp Pro Leu Arg Leu Leu His
20 25 30
Arg Pro Gln Pro Ala Leu Leu Val Arg His Pro Gln Gly Asp Leu Val
35 40 45
Ala Leu Val Glu His His Glu Gly Val Asp Arg Gly Leu Val Ala Leu
50 55 60
Pro Glu Leu His Ala Glu Glu Leu Gly Glu Pro Val Gly Asp Leu Val
65 70 75 80
Gln Gly Pro Val Glu Gln Val Gln Gly Val Val Asp Ala Leu Val Trp
85 90 95
Arg Leu Pro Pro Ser
100

<210> 2
<211> 101
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

<400> 2
Met Asp Glu Lys Thr His Cys Phe His Pro Gly Asp His Leu Val Arg
1 5 10 15

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Leu Val Glu Glu Leu Gln Ala Leu Ala Glu Gly Leu Gln Arg Gln Gly
            20                  25                  30
Gly Arg Gln Pro His Arg Leu Pro Arg Arg Arg Pro His His Leu Gln
        35                  40                  45
Leu Leu Leu Asp Glu Ala His Pro Gln Ala Gly Pro Leu Arg Glu Arg
    50                  55                  60
Ala His Gln Val Asp Gly Arg Leu Leu Leu Gln His His Pro Gln Gly
65                  70                  75                  80
Asp Arg Leu Leu Gln Gln Pro Gln Asp His Pro Leu Glu Leu Val Trp
                85                  90                  95
Arg Leu Pro Pro Ser
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<210> 3
<211> 101
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

<400> 3

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Met Thr Arg Arg Pro Thr Ala Ser Ser Ser Ser Cys Val Arg His Leu
 1               5                  10                  15
Leu Leu Arg Gln Gly Glu His Gly His Gln Ala Leu Glu Asp Arg Asp
            20                  25                  30
Lys Ala Arg His Val Arg Leu Val Glu Gly Asp Val Glu Val Leu Gly
        35                  40                  45
Gly Leu Asp Arg Leu Ala Arg Ala Arg His Glu Ala Leu His Pro Gln
    50                  55                  60
Ala Gly Leu Val His Leu Pro Leu His Gly Gly Asp Leu Gly Gly His
65                  70                  75                  80
Leu Arg Leu Val Leu Glu Ala His Pro Gln Gly Asp Arg Leu Gly Leu
                85                  90                  95
Ala Val His His His
            100
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<210> 4
<211> 102
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

<400> 4

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Met Asp Glu Lys Thr His Trp Gly Ile Ser Thr Trp Arg Gly Glu Pro
 1               5                  10                  15
Leu Leu His His Pro Gln Ala Gly Arg Leu Pro Leu Asp Arg Arg Arg
            20                  25                  30
Ala Arg His Arg Arg Ile Leu Gly Ala Glu Pro Gly Gly Val Asp His
        35                  40                  45
Gly Leu Arg Leu Glu Leu Leu Asp Asp His Arg Pro Leu Val Pro Asp
    50                  55                  60
His His Pro Gln Arg Gly Pro Leu Gln Arg Gly Asp Leu Pro Gln Val
65                  70                  75                  80
```

Val Pro Leu Val Arg Leu Arg His Ala His Val Leu Gly Leu Gly Leu
85 90 95

Ala Ala Ala Thr Ile Thr
100

<210> 5
<211> 102
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

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Met Asp Glu Lys Thr His Trp Val Asn Val Tyr His Pro Gln Gly Asp
1 5 10 15

Leu Leu Val Arg Gly His Gly His Asp Val Glu Ala Leu His Asp Gln
20 25 30

Gly Leu His Gln Leu Asp Leu Leu Val Gly Pro Pro Pro Glu Val Val
35 40 45

Arg Ala Leu Arg Gly Glu Val Leu Gly Gly Leu Arg Arg Leu Val Pro
50 55 60

Leu Asp His Pro Gln Gly Glu Ala Leu Asp Gln Ala Arg Gln Arg Pro
65 70 75 80

Gln His Leu Leu Glu Leu His His Arg Ala Leu Pro Pro Ala Leu Val
85 90 95

Trp Arg Leu Pro Pro Ser
100

<210> 6
<211> 102
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

<400> 6
Met Asp Glu Lys Thr His Trp Leu Asn Asn Phe Glu Glu Leu Leu Ala
1 5 10 15

Arg Leu Asp Gly Leu Arg Glu Gly Glu Asp His Pro Leu Val Leu Arg
20 25 30

His His Pro Gln Gly Asp Gly Leu Leu Asp Gln Pro Leu Gly Arg His
35 40 45

Arg Ala Leu Asp Gly Glu Val Arg Glu Gly Asp Arg Pro Leu Asp Gln
50 55 60

Gly Gly Glu Glu Asp Leu Gly Ala Leu Val Asp Asp Asp Gly Glu Val
65 70 75 80

Leu Asp Gly Leu Val His Val Gly Val His Val His Asp Pro Leu Val
85 90 95

Cys Gly Cys His His His
100

<210> 7
<211> 101

<212> PRT
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<220>
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His Trp Met Ser Ala Val Gly Asn Gly Lys Ile Asp Cys Ser Phe Asn
20 25 30
Met Asn Leu Ser Leu Asn His Trp Leu Ser Ser Gly His Pro Asp Gly
35 40 45
Ala Leu Asp Asp Gln Leu His Pro Gln Gly Asp Ala Leu Val Gly Arg
50 55 60
Asp Asp Gly Val Val Gln Ala Leu Arg Leu Glu Gly Gln His Gln His
65 70 75 80
Arg Arg Leu Ala Gln Arg Arg Ala Asp Arg His Arg Gln Leu Val Trp
85 90 95
Arg Leu Pro Pro Ser
100

<210> 8
<211> 102
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

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His Trp Lys Leu His His His Pro Gln Gly Asp Ala Leu Leu Asp Asp
20 25 30
Gly Val Arg Pro His His Pro Leu Ala Asp Glu Gly Gly Gly Leu Asp
35 40 45
Gln Gly Leu Gly His Arg Arg Gly Val Val Ala Glu Arg Leu Ala Arg
50 55 60
Arg Asp Pro Glu Val Leu Glu Gly Leu Val Glu Arg His Arg Gly Leu
65 70 75 80
Val Pro Arg Leu Arg His Gly Gly Glu Arg His Ala Glu Pro Leu Val
85 90 95
Trp Arg Leu Pro Pro Ser
100

<210> 9
<211> 102
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

<400> 9
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20 25 30
Arg His Asp Leu Val Glu Gly Leu Leu Leu Glu Arg His Pro Gln Gly
35 40 45
Asp Pro Leu Val Ala His Arg Gln Leu Val His His Pro Leu Leu Gly
50 55 60
Arg Gly Glu Arg His Arg Arg Ala Leu Val Pro Gln Gln Glu His Gln
65 70 75 80
Pro His Arg Leu Gln Pro Val Val Asp Leu Gly Arg Arg Arg Leu Val
85 90 95
Trp Arg Leu Pro Pro Ser
100

<210> 10
<211> 103
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

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Met Asp Glu Lys Thr His Trp His Glu Arg Ala Gln Glu Leu Val Gly
1 5 10 15
Gly Leu Leu Leu His Asp His Pro Gln Arg Leu Leu Leu Glu Pro Arg
20 25 30
Gly Pro Arg Pro Leu Arg Gly Leu Val His Glu Arg Gly His Gln Pro
35 40 45
Gln Pro Leu Ala Gly Arg Val Glu Glu Ala Asp Gly Gly Leu Leu Arg
50 55 60
Asp Gly Gly Gly Glu Leu Glu Pro Leu Val Arg Glu Gly Glu Asp His
65 70 75 80
Leu Glu Pro Leu Asp Asp Glu Leu Asp Ala Gly Pro Arg Gly Leu Val
85 90 95
Trp Arg Leu Pro His His His
100

<210> 11
<211> 102
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

<400> 11
Met Asp Glu Lys Thr His Trp His Glu Arg Val His His Leu Ala Asp
1 5 10 15
Gly Leu Glu Gln His Pro Gln Gly Gln Arg Arg Pro Leu Val Glu Arg
20 25 30
His Arg Gln Val Pro Arg Gly Leu Val Arg Glu Leu Gln His Glu Gly
35 40 45
Leu Pro Leu Glu His Pro Ala Gly Val His Val Ile Arg Leu His Gln
50 55 60
Gly Asp Asp Arg Asp Val Asp Gly Leu Val Asp Gly His Gly Arg Asp

65 70 75 80
Val Arg Gly Leu Glu Arg Glu Val Gly Asp Gly Pro His Arg Leu Val
85 90 95
Trp Arg Leu Pro Pro Ser
100

<210> 12
<211> 101
<212> PRT
<213> Artificial Sequence

<220>
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<400> 12
Met Asp Lys Asp Pro Leu Leu Glu Glu Leu Glu Glu Leu Arg Glu Arg
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Leu Val His His Pro Gln Gly Gly Leu Leu Pro Leu Arg Gly Gln Val
20 25 30
Gly His Asp Ala Glu Arg Leu Gly Ala Glu Val Asp Asp Leu Arg Gly
35 40 45
Gly Leu Leu Asp Glu Pro Gln Arg Ala Val Ala Gly Leu His His Val
50 55 60
Pro His Arg Val Gly Gln Arg Leu Val His Glu Val Arg Glu Leu Asp
65 70 75 80
Glu Gly Leu Leu Asp Gln Arg Asp Asp Leu Arg Gln Arg Leu Val Trp
85 90 95
Arg Leu Pro Pro Ser
100

<210> 13
<211> 102
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

<400> 13
Met Glu Arg Glu Asp Pro Leu Asp Glu Gln Leu Arg Glu Leu Arg Glu
1 5 10 15
Ala Leu Val Asp His Pro Gln Gly Gly Ala Gln Ala Leu His Arg His
20 25 30
Asp Gly Gly Glu His Val Pro Leu Arg Arg Val Gln His Arg Leu Gln
35 40 45
Pro Gly Leu Gln His His Leu Glu Pro Gln Pro Leu Gly Leu Leu Gly
50 55 60
Glu Leu Gln Ala Arg Leu Gln Pro Leu Ala Gly Glu His Glu Gly Asp
65 70 75 80
Gly Ala Gly Leu Gln Arg Val Pro Gly His Gln Gly Arg Arg Leu Val
85 90 95
Trp Arg Leu Pro Pro Ser
100

<210> 14

<211> 101
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

<400> 14
Met Asp Glu Lys Thr His Arg Thr Leu Ser Val Ser Leu Ser Phe Asn
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Asp Trp Leu Gly Gln Thr Lys Ala Cys Trp Arg Leu Val Glu Gly Leu
20 25 30
His Gly His Pro Gln Gly Leu Val Arg Glu His Glu Val Asp Val Leu
35 40 45
Pro Leu Ala Glu Glu Val Gln Gln Val Val Gly Gly Leu Ala Asp Gly
50 55 60
Val Glu Gln Pro Gly Gly Gly Leu Leu His Arg Ala Gln Arg Val Asp
65 70 75 80
His Pro Leu Pro Asp His Ala Gly Gln Val Leu Gly Arg Leu Val Trp
85 90 95
Arg Leu Pro Pro Ser
100

<210> 15
<211> 101
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

<400> 15
Met Asp Glu Lys Thr His Trp Leu Glu Asp Leu Lys Gly Val Leu Lys
1 5 10 15
Asp Cys Leu Lys Asp Leu Met Asp Phe Thr Lys Asp Cys Arg Ser Pro
20 25 30
Arg Val Gln Pro Gln Pro Leu Leu His His Asp Arg Gly Glu Pro Val
35 40 45
Pro Leu Leu Arg Glu Ala Gly Arg Asp Leu Gly Gly Leu Gly Pro Arg
50 55 60
Ala Pro Arg Gln Ala Arg Pro Leu His His Gly Arg His Asp Leu His
65 70 75 80
Glu Pro Leu Val Leu Gln Asp His Pro Gln Gly Gly Pro Leu Val Cys
85 90 95
Gly Cys His His His
100

<210> 16
<211> 102
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

<400> 16

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Met Asp Glu Lys Thr His Trp Val Leu Gln Leu His Pro Gln Gly Asp
 1               5                  10                  15
Arg Leu Gly Pro Arg His Gly Gly Asp Asp Val Arg Leu Val Gly Gln
            20                  25                  30
Gly Glu Gly Val Leu Glu Gly Leu Asp Gly Arg Pro Arg Arg Arg Arg
        35                  40                  45
His Arg Leu Pro Arg Glu Asp Glu His Arg Val Arg Ala Leu Val Asp
    50                  55                  60
Gln Val Arg Asp Leu Ala Glu Arg Leu Val Glu Glu Val Asp Gly Gly
65                  70                  75                  80
Val Glu Ala Leu Arg His Leu Gly Leu Pro Gln Asp Glu Pro Arg Ser
                85                  90                  95
Gly Gly Cys His His His
            100
```

<210> 17
<211> 102
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

<400> 17

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Met Asp Glu Lys Thr His Trp Val Gly Asp Leu Gln Glu Pro Leu Gly
 1               5                  10                  15
Pro Leu His Gly Gly Val Gly Glu Val Pro Gly Gly Leu Val Leu Arg
            20                  25                  30
His His Pro Gln Arg Asp Arg Leu Val Asp Gly Val Gly Pro His Gly
        35                  40                  45
Arg Ala Leu Ala Arg Arg Pro His Arg Val Val Glu Gly Leu His His
    50                  55                  60
Leu Leu Gln Arg Gly Gly Glu Arg Leu Pro Pro Asp Gly Pro Arg Gln
65                  70                  75                  80
Leu Gly Leu Leu Gly Gly Glu Leu Asp Arg Ala Asp Pro Ala Leu Val
                85                  90                  95
Trp Arg Leu Pro Pro Ser
            100
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<210> 18
<211> 101
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

<400> 18

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Met Asp Glu Lys Thr His Cys Ala Val Asn Val Asn Val Gly Leu Thr
 1               5                  10                  15
His Trp Cys His Arg Val Ala His Leu Gln Pro Leu Asp Pro His Pro
            20                  25                  30
Gln Gly Asp His Leu Arg Leu Glu Pro Leu Gly His Ala Leu Val Asp
        35                  40                  45
Pro Leu Val Gln Gly Val Glu Glu Val Val Arg Pro Leu Gln Leu Asp
    50                  55                  60
```

Val Gly Val Gln Arg Val Ala Leu Val Glu Gln Val Ala Glu Val Gly
65 70 75 80
Glu Gly Leu Asp His Glu Ala Gly Gln Ala His Gly Ala Leu Val Trp
85 90 95
Arg Leu Pro Pro Ser
100

<210> 19
<211> 101
<212> PRT
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<220>
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<400> 19
Met Asp Glu Lys Thr Thr Gly Trp Arg Gly Gly His Val Val Glu Gly
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Leu Ala Gly Glu Leu Glu Gln Leu Arg Ala Arg Leu Glu His His Pro
20 25 30
Gln Gly Gln Arg Glu Pro Leu Val Gln Glu Val Glu Asp Val Asp Glu
35 40 45
Gly Leu Val Gln Asp Leu His Gly Val Val Ala Gly Leu Leu Asp Pro
50 55 60
Val Glu Lys Leu Leu Thr Asp Trp Phe Lys Lys Phe Lys Asn Val Ser
65 70 75 80
Lys Asp Cys Lys Met Thr Phe Tyr Leu Glu Met Tyr Asp Trp Ser Gly
85 90 95
Gly Cys His His His
100

<210> 20
<211> 102
<212> PRT
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<220>
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<400> 20
Met Asn Glu Lys Thr His Cys Lys Leu Asn Phe Lys Val Asn Ile Ala
1 5 10 15
Asp Trp Leu Ala Glu Phe His Gly Gly Gly Gln Gly Leu Leu Gly Arg
20 25 30
Arg Asp Gly Val Val Gln Arg Leu Val Asp Gly Val Gln Glu Arg Val
35 40 45
Glu Arg Leu Asp Arg Asp Pro Gly Leu Gly Asp Leu Arg Leu Glu Leu
50 55 60
His His Arg Asp His Arg Leu Arg Leu Gly Gly Glu His Leu Leu Arg
65 70 75 80
Asp His Pro Leu Glu Pro Asp Asp His Leu Val Val Gly Gly Leu Val
85 90 95
Trp Arg Leu Pro Pro Ser
100

<210> 21
<211> 101
<212> PRT
<213> Artificial Sequence

<220>
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<400> 21
Met Asp Glu Lys Thr Thr Gly Trp Arg Gly Gly His Val Val Glu Gly
1 5 10 15
Leu Ala Gly Glu Leu Glu Gln Leu Arg Ala Arg Leu Glu His His Pro
20 25 30
Gln Gly Gln Arg Glu Pro Leu Val Gln Glu Val Glu Asp Val Asp Glu
35 40 45
Gly Leu Val Gln Asp Leu His Gly Val Val Ala Gly Leu Leu Asp Pro
50 55 60
Val Glu Lys Leu Leu Thr Asp Trp Phe Lys Lys Phe Lys Asn Val Ser
65 70 75 80
Lys Asp Cys Lys Met Thr Phe Tyr Leu Glu Met Tyr Asp Trp Ser Gly
85 90 95
Gly Cys Lys Leu Gly
100

<210> 22
<211> 89
<212> PRT
<213> Artificial Sequence

<220>
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<400> 22
Met Asp Glu Lys Thr Thr Gly Trp Arg Gly Gly His Val Val Glu Gly
1 5 10 15
Leu Ala Gly Glu Leu Glu Gln Leu Arg Ala Arg Leu Glu His His Pro
20 25 30
Gln Gly Gln Arg Glu Pro Leu Val Gln Glu Val Glu Asp Val Asp Glu
35 40 45
Gly Leu Val Gln Asp Leu His Gly Val Val Ala Gly Leu Leu Asp Pro
50 55 60
Val Glu Lys Leu Leu Thr Asp Trp Phe Lys Lys Phe Lys Asn Val Ser
65 70 75 80
Met Met Ser Gly Gly Cys Lys Leu Gly
85

<210> 23
<211> 75
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

<400> 23
Met Asp Glu Lys Thr Thr Gly Trp Arg Gly Gly His Val Val Glu Gly

1 5 10 15
Leu Ala Gly Glu Leu Glu Gln Leu Arg Ala Arg Leu Glu His His Pro
20 25 30
Gln Gly Gln Arg Glu Pro Leu Val Gln Glu Val Glu Asp Val Asp Glu
35 40 45
Gly Leu Val Gln Asp Leu His Gly Val Val Ala Gly Leu Leu Asp Pro
50 55 60
Val Glu Met Met Ser Gly Gly Cys Lys Leu Gly
65 70 75

<210> 24
<211> 61
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

<400> 24
Met Asp Glu Lys Thr Thr Gly Trp Arg Gly Gly His Val Val Glu Gly
1 5 10 15
Leu Ala Gly Glu Leu Glu Gln Leu Arg Ala Arg Leu Glu His His Pro
20 25 30
Gln Gly Gln Arg Glu Pro Leu Val Gln Glu Val Glu Asp Val Asp Glu
35 40 45
Gly Leu Val Gln Met Met Ser Gly Gly Cys Lys Leu Gly
50 55 60

<210> 25
<211> 47
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

<400> 25
Met Asp Glu Lys Thr Thr Gly Trp Arg Gly Gly His Val Val Glu Gly
1 5 10 15
Leu Ala Gly Glu Leu Glu Gln Leu Arg Ala Arg Leu Glu His His Pro
20 25 30
Gln Gly Gln Arg Glu Pro Met Met Ser Gly Gly Cys Lys Leu Gly
35 40 45

<210> 26
<211> 47
<212> PRT
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<220>
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<400> 26
Met Asp Glu Lys Thr Thr Gly Trp Arg Gly Gly His Val Val Glu Gly
1 5 10 15

Leu Ala Gly Glu Leu Glu Gln Leu Arg Ala Arg Leu Glu His His Gly
20 25 30
Ala Gly Gln Arg Glu Pro Met Met Ser Gly Gly Cys Lys Leu Gly
35 40 45

<210> 27
<211> 39
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

<400> 27
Met Asp Gly His Val Val Glu Gly Leu Ala Gly Glu Leu Glu Gln Leu
1 5 10 15
Arg Ala Arg Leu Glu His His Pro Gln Gly Gln Arg Glu Pro Met Met
20 25 30
Ser Gly Gly Cys Lys Leu Gly
35

<210> 28
<211> 89
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

<400> 28
Met Asp Glu Gly Leu Ala Gly Glu Leu Glu Gln Leu Arg Ala Arg Leu
1 5 10 15
Glu His His Pro Gln Gly Gln Arg Glu Pro Leu Val Gln Glu Val Glu
20 25 30
Asp Val Asp Glu Gly Leu Val Gln Asp Leu His Gly Val Val Ala Gly
35 40 45
Leu Leu Asp Pro Val Glu Lys Leu Leu Thr Asp Trp Phe Lys Lys Phe
50 55 60
Lys Asn Val Ser Lys Asp Cys Lys Met Thr Phe Tyr Leu Glu Met Tyr
65 70 75 80
Asp Trp Ser Gly Gly Cys Lys Leu Gly
85

<210> 29
<211> 29
<212> PRT
<213> Artificial Sequence

<220>
<223> selected peptide

<400> 29
Met Glu Leu Glu Gln Leu Arg Ala Arg Leu Glu His His Pro Gln Gly
1 5 10 15
Gln Arg Glu Pro Met Met Ser Gly Gly Cys Lys Leu Gly

20 25

<210> 30
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> primer 35

<400> 30
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<210> 31
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> primer 35

<400> 31
acuggucugg cggcugcaag cuuggcaccg gcuau

<210> 32
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
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<400> 32
Trp Ser Gly Gly Cys His His His His His His Ser Ser Ala
1 5 10

<210> 33
<211> 11
<212> PRT
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<220>
<223> designed peptide

<400> 33
Trp Ser Gly Gly Cys Lys Leu Gly Thr Gly Tyr
1 5 10

<210> 34
<211> 44
<212> PRT
<213> Artificial Sequence

<220>
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<400> 34
Met Asp Glu Ala His Pro Gln Ala Gly Pro Val Asp Gln Ala Asp Ala
1 5 10 15
Arg Leu Val Gln Gln Gly Ala Leu Gln His His Pro Gln Gly Asp Arg
20 25 30
Met Met Ser Gly Gly Cys Lys Leu Gly Thr Gly Tyr
35 40

<210> 35
<211> 38
<212> PRT
<213> Artificial Sequence

<220>
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<400> 35
Met Asp Glu Lys Thr Thr Gly Trp Arg Gly Gly His Val Val Glu Gly
1 5 10 15
Leu Ala Gly Glu Leu Glu Gln Leu Arg Ala Arg Leu Glu His His Pro
20 25 30
Gln Gly Gln Arg Glu Pro
35

<210> 36
<211> 9
<212> PRT
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<400> 36
Met Met Ser Gly Gly Cys Lys Leu Gly
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<210> 37
<211> 6688
<212> DNA
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<400> 37
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Tyr Asp Ile Lys Asp Val Gly Val Asp Asn Ala Gly Ala Lys Ala Gly
            180                 185                 190
Leu Thr Phe Leu Val Asp Leu Ile Lys Asn Lys His Met Asn Ala Asp
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195 200 205

Thr Asp Tyr Ser Ile Ala Glu Ala Ala Phe Asn Lys Gly Glu Thr Ala
210 215 220

Met Thr Ile Asn Gly Pro Trp Ala Trp Ser Asn Ile Asp Thr Ser Lys
225 230 235 240

Val Asn Tyr Gly Val Thr Val Leu Pro Thr Phe Lys Gly Gln Pro Ser
245 250 255

Lys Pro Phe Val Gly Val Leu Ser Ala Gly Ile Asn Ala Ala Ser Pro
260 265 270

Asn Lys Glu Leu Ala Lys Glu Phe Leu Glu Asn Tyr Leu Leu Thr Asp
275 280 285

Glu Gly Leu Glu Ala Val Asn Lys Asp Lys Pro Leu Gly Ala Val Ala
290 295 300

Leu Lys Ser Tyr Glu Glu Glu Leu Ala Lys Asp Pro Arg Ile Ala Ala
305 310 315 320

Thr Met Glu Asn Ala Gln Lys Gly Glu Ile Met Pro Asn Ile Pro Gln
325 330 335

Met Ser Ala Phe Trp Tyr Ala Val Arg Thr Ala Val Ile Asn Ala Ala
340 345 350

Ser Gly Arg Gln Thr Val Asp Glu Ala Leu Lys Asp Ala Gln Thr Asn
355 360 365

Ser Ser Ser Gly Gly Ser Gly Ser Gly Met Asp Glu Lys Thr Thr Gly
370 375 380

Trp Arg Gly Gly His Val Val Glu Gly Leu Ala Gly Glu Leu Glu Gln
385 390 395 400

Leu Arg Ala Arg Leu Glu His His Pro Gln Gly Gln Arg Glu Pro Gly
405 410 415

Ser Gly His His His His His His Glu Phe
420 425